LANGUAGES

French, Hebrew, Romanian (speak and read all three fairly well; write French and Hebrew adequately)

HONORS

U.S. Department of Justice, Antitrust Division: Special Achievement Awards
Brookings Institution: Research Fellow, 1979-80
University of California, Los Angeles: Earhart Fellowship, 1977-78
University of California, Los Angeles: Regents Fellowship, 1976-77
London School of Economics: Premchand Prize in Monetary Economics, 1976

PUBLICATIONS

Refereed Journals

"A Quality-Signaling Rationale for Aftermarket Tying," *Antitrust Law Journal,* vol. 64 (Winter 1996): 387-404 (with Gregory J. Werden).

"The Non-Existence of Pairwise-Proof Equilibrium," *Economics Letters,* vol. 49 (1995): 251-259 (with R. Preston McAfee).

"Equity as a Call Option on Assets: Some Tests for Failed Banks," *Economics Letters,* vol. 48 (1995): 389-397 (with Behzad Diba and Chia-Hsiang Guo).

"Parallel Imports, Demand Dispersion, and International Price Discrimination," *Journal of International Economics,* vol. 37 (November 1994): 167-195 (with David Malueg).

"Opportunism in Multilateral Vertical Contracting: Nondiscrimination, Exclusivity, and Uniformity," *American Economic Review,* vol. 84 (March 1994): 210–230 (with R. Preston McAfee).

"Preemptive Investment, Toehold Entry, and the Mimicking Principle," *RAND Journal of Economics,* vol. 22 (Spring 1991): 1–13 (with David Malueg).

"Patent Protection through Discriminatory Exclusion of Imports," *Review of Industrial Organization,* vol. 6 (No. 3, 1991): 231–246.

"Third–Degree Price Discrimination and Output: Generalizing a Welfare Result," *American Economic Review,* vol. 80 (December 1990): 1259-1262.

"Investments in Oligopoly: Welfare Effects and Tests for Predation," *Oxford Economic Papers,* vol. 41 (October 1989): 698-719.

"Entry Deterrence Externalities and Relative Firm Size," *International Journal of Industrial Organization,* vol. 6 (June 1988): 181-197 (with Michael Baumann).

"The Competitive Effects of Vertical Agreements: Comment," *American Economic Review,* vol. 77 (December 1987): 1063-1068.

"The Nature and Scope of Contestability Theory," *Oxford Economic Papers,* vol. 38 Supplement (November 1986): 37-57.
This issue of the journal was published in parallel as *Strategic Behavior and Industrial Competition,* Morris et al. Eds., Oxford University Press, 1986.

"The Perverse Effects of the Robinson-Patman Act," *Antitrust Bulletin,* vol. 31 (Fall 1986): 733-757.

"Divisionalization and Entry Deterrence," *Quarterly Journal of Economics,* vol. 101 (May 1986): 307-321 (with Earl Thompson).

"*Illinois Brick* and the Deterrence of Antitrust Violations," *Hastings Law Journal,* vol. 35 (March 1984): 629–668 (with Gregory Werden).

"Contestable Markets: An Uprising in the Theory of Industry Structure: Comment," *American Economic Review,* vol. 73 (June 1983): 488-490 (with Robert Reynolds).

Monographs, Book Reviews, and Other Publications

"Telecommunications Reform in the United States: Promises and Pitfalls," in Paul J.J. Welfens and George Yarrow, Eds., *Telecommunications and Energy in Systemic Transformation,* Heidelberg and New York: Springer, 1997.

"Protecting Intellectual Property by Excluding Infringing Imports: An Economist's View of Section 337 of the U.S. Tariff Act," *Patent World,* Issue 25 (September 1990): 29-35.

Review Essay of: Jean Tirole, The Theory of Industrial Organization, MIT Press, 1988. *Managerial and Decision Economics,* Vol. 11 (May 1990): 131-139.

Book Review of: J. Stiglitz and F. Mathewson eds., New Developments in the Analysis of Market Structure, MIT Press, 1988. *Journal of Economic Literature,* Vol. 36 (March 1988): 133-135.

"Vertical Restraints," published in German by *Forschungsinstitut fur Wirtschaftsverfassung und Wettbewer* by E.V. Koln, Heft 5, 1984.

DISCUSSION PAPERS AND WORK IN PROGRESS

"Towards Competition in International Satellite Services: Rethinking the Role of INTELSAT," paper distributed at OECD Ad Hoc Meeting of Experts on Competition in Satellite Services, Paris, June 1995 (with Joseph E. Stiglitz and Eric Wolff).

"Competitive Markets in Generation: Economic Theory and Public Policy," paper presented at conference on "Electric Utility Restructuring: Whither Competition?" organized by International Association for Energy Economics Los Angeles Chapter, and Micronomics Inc., Los Angeles, May 1995.

"Exclusive Dealing for Rent Extraction," mimeo, January 1994 (with Serge Moresi and Francis O'Toole).

"Option Values of Deposit Insurance and Market Values of Net Worth: Some Evidence for U.S.Banks," mimeo, December, 1992 (with Behzad Diba and Chia-Hsiang Guo).

"Do Sunk Costs Discourage or Encourage Collusion?" U.S. Department of Justice, Antitrust Division, EPO Discussion Paper 85-10 (September 1985).

"Signalling Equilibria Based on Sensible Beliefs: Limit Pricing Under Incomplete Information," U.S. Department of Justice, Antitrust Division, EPO Discussion Paper 84-4 (May 1984) (with Maxim Engers).

OTHER SCHOLARLY ACTIVITIES

Seminars Presented

Bellcore
Bureau of Competition Policy, Industry Canada
California State University, Hayward
Columbia University
ENSAE, Paris
Federal Trade Commission
Georgetown University
George Washington University
International Trade Commission
Johns Hopkins University
New York University
Pennsylvania State University
Simon Fraser University
Tulane University
U.S. Department of Justice
University of Alberta
University of British Columbia
University of Calgary
University of California, Davis
University of California, Los Angeles
University of Maryland
University of Montreal
University of Pennsylvania
University of Toronto
University of Virginia

Conferences: Speaker or Discussant

Economics of Interconnection Forum, Federal Communications Commission, Washington DC, May 1996
Authors' Symposium on Competition Policy and Intellectual Property Rights, Canadian Bureau of Competition, Aylmer, Quebec, May 1996
Electric Generation Association, Annual Meetings, West Palm Beach, April 1996
"Wheeling & Dealing: Opportunities and Challenges in the New Electric Industry," conference sponsored by the Center for Regulatory Studies, Illinois State University and the Institute of Government and Public Affairs, University of Illinois- Urbana, Chicago, April 1996
"New Social and Economic Approaches to a Multimedia World," OECD Symposium, Tokyo, March 1996
"Telecommunications and Energy Regulation in Transition Economies," Center for Economic Development, Bratislava, October 1995
"Electric Utility Restructuring: Whither Competition?" organized by International Association for Energy Economics Los Angeles Chapter, and Micronomics Inc., Los Angeles, May 1995.
"New Learning on Barriers to Entry in Competition Policy," Canadian Bureau of Competition, Ottawa, March 1995
Southeastern Economic Theory Meetings, Charlottesville, October 1994
EARIE Conference, Tel Aviv, September 1993
Midwest International Economics Meetings, Pittsburgh, October 1992
Latin American Econometric Society, Mexico City, September 1992
Conference on Industrial Organization, Carleton University, Ottawa, July 1991
Workshop on Strategic and Dynamic Aspects of International Trade, SUNY at Stony Brook, July 1991

AEI Conference on "Innovation, Intellectual Property and World Competition," Washington DC, September 1990
EARIE Conference, Lisbon, September 1990
Conference on "International Trade and Technology," Brussels and London, November 1989
EARIE Conference, Budapest, August 1989
Conference on Strategy and Market Structure, Dundee University, Dundee, August 1988
Conference on "Firm Ownership and Competition," Graduate School of Business, Stanford University, June 1987
EARIE Conference, Berlin, August 1986
AEA Annual Meetings, Dallas, December 1984

Referee for Professional Journals

American Economic Review
Canadian Journal of Economics
Economica
Economic Journal
International Economic Review
International Journal of Industrial Organization
Journal of Business
Journal of Business Economics
Journal of Economic Dynamics and Control
Journal of Economic Theory
Journal of Economics and Management Strategy
Journal of Industrial Economics
Journal of Political Economy
Managerial and Decision Economics
Quarterly Journal of Economics
Quarterly Review of Economics and Business
RAND Journal of Economics
Review of Industrial Organization
Review of International Economics
Scandinavian Journal of Economics

Outside Evaluator--Research Proposals and Tenure & Promotion Cases

National Science Foundation
Small Business Administration
Several economics departments (identities disclosed on request)

TAB D

EXHIBIT

AFFIDAVIT OF MICHAEL J. FRIDUSS

AFFIDAVIT OF MICHAEL J. FRIDUSS
ON BEHALF OF
THE ANTITRUST DIVISION
OF THE
DEPARTMENT OF JUSTICE

May 16, 1997

I. PROFESSIONAL BACKGROUND

1. My name is Michael J. Friduss. My business address is 1555 Museum Drive, Highland Park, IL 60035. I am an independent consultant working with CA Hempfling & Associates under contract with the Antitrust Division of the Department of Justice.

2. I received a Bachelor of Science degree in industrial engineering from the Illinois Institute of Technology in 1964, and a Masters degree in Management from Northwestern University in 1971.

3. I began my telecommunications career in 1964 as a Management Assistant for Illinois Bell Telephone Company ("Illinois Bell"). In this capacity, I filled a variety of non management and management positions designed to familiarize me with all departments of the company.

4. From 1966 to 1969, I was a Manager in Illinois Bell's Plant Department. In this capacity, I supervised installation or repair operations in three different territories on the South side of Chicago.

5. In 1969, I was promoted to District Engineering Manager, responsible for the engineering and design of outside plant, also on Chicago's South side. In 1970, I was appointed District Manager-Outside Plant Engineering Staff for Chicago Operations, responsible for methods and procedures and approval of major outside plant capital expenditures. In 1971, I was appointed District Plant Manager, responsible for installation and repair activities in Chicago's Hyde Park area. During my tenure in Hyde Park, I also headed up an Operations Review team that assessed

the quality and cost performance of each district in Chicago Operations.

6. I was promoted to Division Manager-Corporate Planning at AT&T in New York in 1973 and served through 1975. In this capacity, I headed a small group responsible for the study of the telecommunications interexchange industry at that time and what AT&T's future strategy should be in that segment of the industry.

7. In 1975, I returned to Illinois Bell as Division Plant Manager, responsible for installation and repair in the South suburban area. In 1978, I was named Division Manager-Corporate Planning for the company, responsible for Illinois Bell's planning and operations budgeting, including operations planning for the implementation of the FCC's Computer Inquiry II and divestiture.

8. In 1983, I was promoted to General Manager-Distribution Services, responsible for Illinois Bell's outside operations, construction, and engineering. In this capacity, I supervised 7,000 employees and a budget of $500 million.

9. In 1986, I was promoted to Vice President-Personnel and Support Services for Michigan Bell and in 1989 was named Vice President-Customer Sales and Service for the same company. In the latter role, I was chief operating officer of the company and a member of the Board of Directors, with responsibility for operations and sales, including 11,000 employees and expenditures in excess of $1 billion.

10. In 1992, I returned to Ameritech Services as Vice President-Customer Service and Information Technology, responsible for the strategic and tactical direction of Ameritech's customer service and operations, as well as planning, building, and maintaining high quality and efficient computer systems (chief information officer). I retired from this position in 1993.

11. In late 1993, I formed MJ Friduss & Associates, consultants to the telecommunications industry. Our clients are carriers, primarily current and new local service providers, and small to medium sized companies that provide hardware, software, and operating systems to those service providers. We are currently working with a number of firms in the areas of strategic planning, marketing, operations, customer services, and supplier management.

12. Additionally, I am Editor of the Friduss Report, a newsletter focused on carrier procurement processes.

II. SCOPE OF ASSIGNMENT

13. I have been asked by the Antitrust Division of the U.S. Department of Justice for my opinion regarding the appropriateness and comprehensiveness of the performance measures Southwestern Bell (SWBT) proposes to provide to competitors and regulators. In particular, I have been asked whether these performance measures will reasonably depict the performance of wholesale functions SWBT is obligated to perform pursuant to the competitive checklist of section 271 of the 1996 Act, and whether such measures will enable competitors and regulators to determine both the adequacy of SWBT's performance and the parity of such performance when compared to SWBT's retail operations.

14. The primary source upon which I relied for my analysis is SWBT's Section 271 application for Oklahoma. I generally reviewed the application for any discussion of performance measures. Additionally, I have reviewed:

* Oklahoma Corporation Commission's Operating and Maintenance Requirements

pertaining to Southwestern Bell.

* The FCC's Quality of Service report, which summarizes quality of service based on data submitted by the BOCs, GTE and Sprint.

* SWBT's Statement of Generally Available Terms and Conditions ("SGAT") before the Corporation Commission of the State of Oklahoma to provide interLATA telephone service in Oklahoma.

* Testimony before the Corporation Commission of the State of Oklahoma related to Southwestern Bell's application for full interLATA competition in Oklahoma.

* The Telecommunications Act of 1996.

* Interconnection Agreements between SWBT and Competitive Local Exchange Carriers ("CLECs") in Oklahoma.

* SWBT's Interconnection Agreement with AT&T in Texas.

* Performance Measures proposed by other BOCs as well as proposals by several CLECs.

* Letters from SWBT to the Department of Justice regarding the performance measures on which SWBT proposes to report.

* Comments SWBT filed with the FCC related to section 272 of the 1996 Act.

15. I have also attended meetings both with SWBT and several CLECs interconnecting with or negotiating to interconnect with SWBT, or reviewed notes of such meetings.

16. Additionally, I have reviewed performance measures proposed by other BOCs, such as the attached Ameritech proposal, in various proceedings in other states.

17. Finally, in reviewing SWBT's proposals, I have drawn upon my significant experience with quality performance measures. As a telephone company line manager and officer, my

performance was judged in part by how well I met customer service objectives. Further, as a staff manager, I had responsibility for the development and implementation of quality performance measures.

III. PERFORMANCE MEASURES AND THEIR ROLE

18. The 1996 Act obligates incumbent local exchange carriers (ILEC's), and thus Bell Operating Companies (BOCs), to provide requesting carriers with, among other things, interconnection, access to unbundled network elements, and resale services. In fulfilling these obligations BOCs will perform a variety of functions for competitors, many of which BOCs also perform in providing retail services. Some of these functions, however, will be new.

19. The ability to detect discrimination in the performance of these functions is dependent on the establishment of performance measures, allowing competitors and regulators to measure the BOC's performance. The development of appropriate measures is critical to establishing that the local market is open. On an ongoing basis, the measures must be able to assure that the local market remains open and that any BOC backsliding will be detected.

20. Performance measures serve as criteria for indicating the performance of such wholesale functions. Performance measures enable competitors and regulators to compare a BOC's performance of a function with that provided a BOC's retail customer, or make an assessment of such function in the abstract. For example, to measure how well a BOC performs the function of provisioning resold local service, we can define a performance measure -- "the percentage of orders not completed within three days" -- and use it to describe the BOC's performance and to

compare it to the BOC's retail performance of the same function. In general, performance measures are used to determine quality, measuring how long an activity takes to complete -- cycle time -- and how well the activity is performed -- reliability.

21. A performance measure may take the form of an objective or target, such as the example cycle-time measure "three days to complete an order" above, where the result is a percentage of orders meeting or not meeting the target. A performance measure can also be a raw time interval, such as the average number of days to complete resale orders. In neither case, however, does the outcome of the measure -- the percentage or cycle time -- itself indicate "good" performance or "bad" performance. Thus, performance measures themselves are not the barometers of performance, but rather the yardsticks with which to measure such performance. Accordingly, my review is limited to the adequacy of SWBT's performance measures, rather than the adequacy of its performance.

22. The highest priority performance measures should be those that describe the end-to-end quality of service -- cycle time and reliability -- from the customer's viewpoint. Studies over the years have identified performance measures that correlate highly with the customer's perceptions of service quality, such as the percentage of repeat reports of trouble, while others have a lower correlation.

23. While performance measures are generally easy to identify, there is no universally accepted definition of what the measure proposes to reveal nor specifically how to gather the necessary data that comprises the measure. For example, cycle-time performance measures are dependent on the specific definition of start and stop times, while reliability measures are dependent on the specific definition of what constitutes a failure. This affidavit does not attempt to specify these

definitions. However, it is critical that SWBT and interconnecting CLECs do so. To further ensure the usefulness of the results, I have assumed that all parties will commit to reporting results that reflect the spirit of the performance measure as well as its paper definition. For example, in measuring the level of missed appointments, the result should be measured against the original due date; due date changes could only be considered when explicitly requested by the end user.

24. My review of SWBT's proposed performance measures includes an assessment of:

* The scope of the functions measured.
* Whether the proposed measures will allow CLECs and regulators to compare BOC wholesale and retail performance of the functions measured.
* The value or applicability of the measures in terms of disaggregating appropriate functions, markets, and products.
* The stability of the measures.
* The scaleability of the measures.

A. BOC PERFORMANCE MEASURES TO DATE

25. Over the past 120 years, telephone companies have developed extensive measures of customer service. These performance measures have generally served two purposes: first, to allow for the comparison of performance between managers, territories, organizations, and companies; and second, to provide regulators with indicators of potential problems. These measures cover all areas of customer-affecting performance, including customer care, provisioning, repair, billing, and network maintenance. Regulatory requirements notwithstanding, these performance measures comprise a key indicator of management success. Objectives are set, data is gathered, reports are published, and results become part of the corporate, organizational, and individual

success determination.

26. Using performance measures, most state public utility commissions require achievement of certain *levels* of performance for customer service. For example, the Oklahoma Corporation Commission requires the following:

* 95% of all installations provided within 4 working days.
* No held service orders over 30 days.
* 90% of subrate (56kb) circuits within 90 days of the service order.
* 80% of toll calls answered within 10 seconds.
* 75% of directory assistance calls answered within 10 seconds.
* 75% of repair calls answered within 20 seconds.
* 95% dialtone within 3 seconds.
* 90% call completion without trunk busy condition within a central office.
* 95% call completion without trunk busy condition on local interoffice trunks.
* 97% call completion without trunk busy on intralata toll trunks.
* No more than 30 decibels above reference level on interoffice calls.
* No more than 33 decibels above reference level on access facilities.
* No more than 10 decibels on access lines measured to the network interface.
* 90% out of service repairs completed next working day.
* Repair report rate (not including CPE or inside wiring):
    * 12 per 100 access lines in exchanges of less than 300 access lines.
    * 9 per 100 access lines in exchanges between 301 and 2000 access lines.
    * 7 per 100 access lines in exchanges over 2000 access lines.

27. The FCC requires the BOCs, GTE, and Sprint to submit quality of service data that is summarized annually in a report entitled "Quality of Service for the Local Operating Companies Aggregated to the Holding Company Level." Without specifying particular levels, the report includes the following performance measures:

* Percent of installation appointments met
* Average missed installations in days
* Average repair interval
* Initial trouble reports per 1000 access lines
* Troubles found per 1000 access lines
* Repeat trouble as a percent of initial trouble reports
* Complaints per million access lines
* Switches with downtime
* Average switch downtime in seconds per switch
* Unscheduled downtime over 2 minutes per occurrence
* Scheduled downtime over 2 minutes per occurrence
* Trunk groups with blocking as a percent of total trunk groups

B. PARITY VERSUS ADEQUACY PERFORMANCE MEASURES

28. Given the dual retail and wholesale roles BOCs must now play under the 1996 Act, there are two approaches to measuring the performance of a particular function: parity performance measurements and adequacy performance measurements. When a BOC's performance of certain functions for its retail units or "end user" customers is identical or analogous to the performance of those functions for competitors or their customers, parity performance measures apply. Parity

performance measures merely juxtapose performance results, such as trouble reports per month per customer placed by the BOC's customers compared with those of a competitor's customers. Thus parity performance measures are used for "apples to apples" comparisons, and are most often applied in the resale environment, where the functions a BOC performs for a competitor's customers are almost identical to those performed for its own retail customers.

29. In contrast, adequacy performance measures establish an objective or target pertaining to functions a BOC either (1) performs only for competitors, or (2) performs for competitors in a manner sufficiently different from that performed for the BOC itself such that a comparison is meaningless or unhelpful. Thus adequacy performance measures apply in "apples-to-oranges" comparisons. An example might be the average time to provision an unbundled loop.

C. BOC WHOLESALE FUNCTIONS

30. It is helpful to divide the functions BOCs will perform for CLECs under the 1996 Act into five primary categories: preordering, ordering, provisioning, maintenance and repair, and billing functions. These categories describe the functions through which CLECs acquire new customers and subsequently maintain facilities for them and bill them. Within each category, performance measures identify the cycle-time and reliability of each function. Performance parity is achieved if CLEC customers enjoy cycle time and reliability of functions equivalent to that experienced by the BOC's customers or its affiliates' customers.

31. Pre-ordering describes the up-front process of a CLEC or BOC customer service representative obtaining information to place an order for new, additional, or changed service. Pre-order cycle time performance measures generally refer to operations support system (OSS) response times that allow the representative to complete the service order with the customer on

the line (e.g. customer address verification or appointment scheduling). Pre-order reliability performance measures refer to the accuracy and completeness of the data received. These pre-ordering functions are generally visible to the end user.

32. Ordering describes the process of the service representative transmitting the service order into the BOC's OSSs for facility assignment, data base updates (including 911, directory listing, and repair), switch updates, and dispatch of a technician if required. For a CLEC, this includes successfully moving the service order across an agreed-upon interface into the BOC's OSSs. Ordering cycle time performance measures refer to BOC response times for notices of order confirmation, jeopardy, or rejection. Ordering reliability performance measures refer to the accuracy and completeness of these notices. Ordering is generally transparent to end users.

Ordering performance measures also relate to the measurement of service order "flow-through." Flow-through measures the percentage of service orders that flow from the service representative to completion if no technician dispatch is required or to the point of dispatch if dispatch is required.

OSS availability and BOC service center answer time performance measures can also be considered to be part of the ordering process.

33. Provisioning involves the execution of a request for a set of products and services or unbundled network elements with attendant acknowledgments and status reports. Provisioning performance measures measure how quickly and how well customer service orders are completed. Provisioning results are highly visible to end users and are critical to the determination of performance parity. Provisioning cycle time performance measures refer to measuring the interval, from the end user's perspective, from order placement to order completion. Example

measures include average POTS completion interval and percent missed appointments. Provisioning reliability performance measures refer to the accuracy of the work (i.e., did the end user receive what they ordered) and to the quality of the work done (i.e., did everything work). An example measure is the percentage of new service failures within an agreed upon time.

34. For purposes of this review, I have evaluated categories of repair and maintenance separately. Repair is the process by which end users report a case of trouble and the trouble is subsequently cared for. This process is highly visible to the end user and has a high correlation with the end user's perception of the service provider. Repair cycle time performance measures measure the interval from end user report to trouble clearance and notification. Examples include mean time to repair and percent missed appointments. Repair reliability performance measures measure the quality of the repair operation. An example is the percentage of trouble recurring within an agreed upon time.

35. Maintenance refers to how well the network itself is maintained and associated performance measures generally refer to reliability rather than cycle time. The most visible performance measure is the mean time between troubles, often referred to as the trouble report rate. Other performance measures measure how well the BOC's switching and transmission elements are maintained. Examples include percent dial tone delay, percent switches with unscheduled downtime, and transmission signal to noise ratio.

36. Billing performance measures measure the speed, accuracy, and completeness of end user usage data from the BOC to the CLEC. While the process may be transparent to the end user, the end product is highly visible. Examples of performance measures include the percentage of billing records delivered on time and the percentage of accurate and complete bills.

37. There are several miscellaneous functions that must also be measured. For example, toll and directory assistance operator services and directory listing must be included as performance parity categories. Typical performance measures include operator speed of answer and directory listing accuracy.

D. MARKET AND PRODUCT DISAGGREGATION OF PARITY PERFORMANCE MEASURES

38. As discussed above, meaningful determinations of parity performance require "apples-to-apples" comparisons of the functions performed by a BOC. Where, however, the same function is performed, for example, by different personnel, with different facilities, for different customer classes, or for different products, more refined comparisons are required. Thus, for example, the function of installing POTS service for consumer and business customers may be identical, but because business customers may be more sensitive to installation delays, a meaningful comparison may require juxtiposition of only business customer installation intervals.

39. There are two general categories of such further disaggregation. First, market parity refers to equality between appropriate customer groups. Customer groups may be broken out geographically or by class of service. Geographic market parity means comparing CLEC results to BOC results within the geography the CLEC has chosen to offer service. For example, if a CLEC offers resale service only in city A, a meaningful comparison may require the BOC to provide their retail results only for city A.

40. Class of service market parity means comparing CLEC results to BOC results within the classes of service the CLEC has chosen to offer. For example, if a CLEC offers service to small business end users only, for purposes of comparison a BOC would have to provide its retail

results for such small business users.

41. A second category of disaggregation is product parity. Product parity can be divided into wholesale and retail product types. The first breakout is by the type of wholesale product: resale services, unbundled network elements, or facilities-based interconnection. Resale performance measures are generally parity measurements, while unbundled element and facilities-based interconnection performance measures are generally adequacy measurements. The second breakout is by the retail product or service offered to the end user: POTS, Hicap, Subrate, ISDN, Centrex, etc. For example, if a CLEC chooses to offer ISDN, the BOC would provide performance measurements for their own ISDN retail product.

E. REPORTING REQUIREMENTS

42. Once appropriate performance measures have been agreed to and the data gathered, the results must be formatted into reports and provided to CLECs and regulators. My review will include proposed report formats, report frequency, the appropriateness of result comparisons, report accuracy and completeness, and the availability of raw data.

43. Report format relates to how performance measure results are presented. Are they presented in table or graph form? Are they readable and understandable? Can a CLEC or regulator determine whether parity has been achieved? Report frequency relates to how often reports will be provided. Report accuracy and completeness relate to the statistical validity of the proposed data. Appropriateness of results comparisons relates to the entities for which the data will be provided. BOC retail? BOC subsidiaries? The CLEC? All CLECs? Other?

IV. REVIEW OF SWBT'S PROPOSED PERFORMANCE MEASURES

44. This section of the affidavit turns to the performance measures explicitly cited in SWBT's application, performance measures implied by existing interconnection agreements or comments on Section 272 service requirements, and performance measures not explicitly or implicitly included that are important to measuring functions required under the 1996 Act.

A. PERFORMANCE MEASURES REFERENCED IN THE APPLICATION

45. SWBT's application for provision of in-region, interLATA service in Oklahoma commits to equal quality of interconnection to new entrants. Section II.B.1. of SWBT's Brief in support of the application states, "To ensure equal quality, interconnection with CLECs will be accomplished using the same facilities, interfaces, technical criteria, and service standards as SWBT uses for its own internal operations." SWBT Brief at 19, citing Deere Aff. ¶25. Further, with regard to resale, SWBT commits to making services available for resale that are "equal in quality, subject to the same conditions, and provided with the same provisioning time intervals as the services SWBT provides to other customers, including end users." Id. at 40, citing Kaeshoffer ¶64.

46. SWBT's application states that their experience providing exchange access services to the long distance industry, together with "established, objective performance measures and monitoring mechanisms, make a reversal to lower quality service utterly implausible." Deere Aff. ¶160; Kahn Aff. ¶45. The application goes on to identify currently filed and available regulatory reports that relate to service quality, customer satisfaction, and infrastructure investment. The application cites trunk blockage, total switch downtime, consumer satisfaction, and installation and repair intervals as examples of performance measures currently available on reports filed with

the FCC. As discussed above, these measures, if properly measured and reported, can be important parity determinants. FCC ARMIS reporting by itself, however, is not sufficient to judge performance parity.

* Truck blockage - an excellent measure of network engineering and maintenance
* Total switch downtime - a fine reliability measure, but not a telling determinate of parity.
* Customer satisfaction - the ultimate measure of end user customer service, but would need to differentiate between SWBT and the CLEC to be meaningful as a parity determinate.
* Installation interval - an excellent measure of provisioning cycle time and therefore an integral performance parity determinant. Agreement needs to be reached on stop and start time and appropriate reporting requirements for BOC - CLEC comparisons.
* Repair interval - an excellent measure of maintenance cycle time and integral to performance parity determination. As above, agreement needs to be reached on start and stop times and appropriate reporting requirements.

47. Obviously, SWBT would need to provide separate data for retail versus wholesale performance to make a comparison. The ARMIS data filed with the FCC does not provide such a breakout. Nor does the ARMIS data cover many of the new functions BOCs will have to perform for CLECs under the 1996 Act.

48. SWBT's application also refers to sixteen negotiated interconnection agreements in Oklahoma, with six approved by the Oklahoma Corporation Commission. Zamora Aff. ¶24.

SWBT primarily relies on these agreements as providing all the performance measures necessary to gauge its performance of wholesale functions.

49. Most interconnection agreements entered into under the 1996 Act, including SWBT's agreements with CLECs, include no or few references to specific performance measures. Based on discussions with numerous CLECs, a primary reason for this appears to be the weakness of CLEC negotiating positions and a higher priority placed on entering the market versus delaying negotiations or enduring arbitrations to establish long-range safeguards such as performance measures. The CLECs reason that once in the market, they'll attempt to renegotiate the subject of performance measures, or merely rely on those established by larger carriers such as AT&T. As a result, interconnection agreements in general, and as discussed below SWBT's in particular, provide insufficient performance measures necessary to allow for a Section 271 determination of nondiscriminatory performance of wholesale functions.

50. Finally, I reviewed SWBT's Statement of Generally Available Terms and Conditions ("SGAT") filed with the Oklahoma Corporation Commission on January 15, 1997. The SGAT commits to providing new entrants with network elements, resale services, and access to OSS functions. For network elements, it also commits to performance "at least equal in quality and performance as that which SWBT provides to itself." SGAT Appendix UNE 2.14.1. Further, it provides for liquidated damages if cycle time objectives in the installation and repair of unbundled loops and the installation of interim number portability are missed. These liquidated damage provisions also appear in SWBT's executed interconnection agreements. However, these few performance measures are inadequate in both number and scope to monitor and guard against whether SWBT will have the ability to discriminate against new entrants.

B. PERFORMANCE MEASURES INCLUDED IN INTERCONNECTION AGREEMENTS

51. SWBT has sixteen interconnection agreements in the State of Oklahoma. These agreements commit to several explicit performance measures that are also identified in SWBT SGAT. Most commit to specific objectives for:

* UNE loop provisioning intervals- This can be an excellent measure of product specific provisioning cycle time and determinant of performance adequacy. However, start and stop times need to be defined for this measure to be an effective gauge of performance.
* Interim Number Portability provisioning intervals- This can be an excellent measure of provisioning cycle time and determinant of performance adequacy. However, start and stop times need to be defined for this measure to be an effective gauge of performance.
* UNE loop out-of-service repair intervals- Excellent measure of product specific maintenance cycle time and determinant of performance adequacy.

52. In its interconnection agreement with AT&T in Texas, SWBT commits to providing the following resale "Performance Metrics":

* Expedited order status notification- A good measure of ordering performance adequacy.
* Percent missed due dates- An excellent measure, when tied to provisioning interval, of provisioning cycle time performance. It is critical that this measure is determined with respect to the original due date, rather than a 'new' due date set in response to work force or other delays. Data needs to be gathered and reported by product and market.

Reporting required by many state regulatory bodies and the FCC. This performance measure has also been proposed by Ameritech and PacTel.

* Percent right the first time- An excellent measure of provisioning reliability performance, if properly gathered and reported in an appropriate format. This has also been proposed by Ameritech in their Michigan SGAT and by PacTel.

* Percent no access- Not a reliable measure of performance parity because achievement levels are generally determined by customer behavior rather than company performance.

* Service Center response time- An excellent potential measure of ordering cycle time performance. However, response time needs to be specifically defined as "time to speak to the SWBT representative."

* "Repair service that is at least equal in quality to that provided to SWBT customers; trouble calls from AT&T will receive response time and priorities that are at least equal to that of SWBT customers." Attachment Maintenance - Resale 4.1. This commitment, while commendable, needs to be matched by specific cycle time and reliability measurements.

53. In the AT&T agreement, referring to the Performance of (Unbundled) Network Elements, SWBT commits to meeting "applicable performance measures and be at least equal in quality and performance as that which SWBT provides to itself."Texas interconnection appendix UNE 2.16.1 Oklahoma SGAT appendix 2.14.1. At AT&T's request, SWBT "will: (1) maintain data that compares the installation intervals and maintenance/service response times experienced by AT&T's customers to those experienced by SWBT customers and the customers of other LSP's; and (2) provide the comparative data to AT&T on a regular basis."Attachment UNE 2.16.7.